Surface Optimization Techniques for Deployable Reflectors, Phase II

Completed Technology Project (2009 - 2012)

Project Introduction

Under this and several other programs, CTD has developed TEMBO

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deployable solid-surface reflectors (TEMBO

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Reflectors) to provide future NASA and Air Force missions and commercial communications satellites with large RF apertures that can operate at very high operational frequencies (Ka band and above). TEMBO

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Reflectors incorporate non-tensioned graphite composite membranes that are formed using conventional construction techniques and stiffened using CTD's TEMBO

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shape-memory composite panels to allow practical packaging and deployment without complex mechanisms. The simplicity of the design provides a significant cost advantage when compared to existing deployable reflector technologies, (4-fold cost reduction over mesh antenna and 2-fold reduction in manufacturing time) and the continuous graphite surface enables high frequency antenna operations at Ka band and above. CTD can stow either a Cassegrainian (center-fed) or Gregorian (offset-fed) 5m TEMBO

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Reflectors in a Falcon 1e launch vehicle. To moderate cost and fabrication time, the TEMBO

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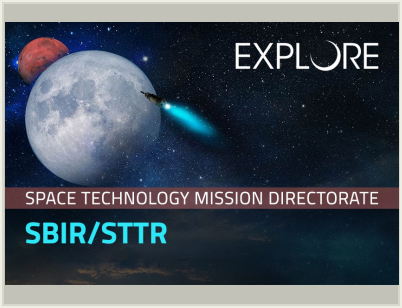
reflector is supported by a deployable backing structure. In the proposed Phase II effort, CTD will further refine innovative backing structure developed in Phase I as well as to develop additional precision capability to enable both the high frequency (Ka band and above), large aperture (5 to 8 meters) performance required for near-term and future NASA programs.



Surface Optimization Techniques for Deployable Reflectors, Phase II

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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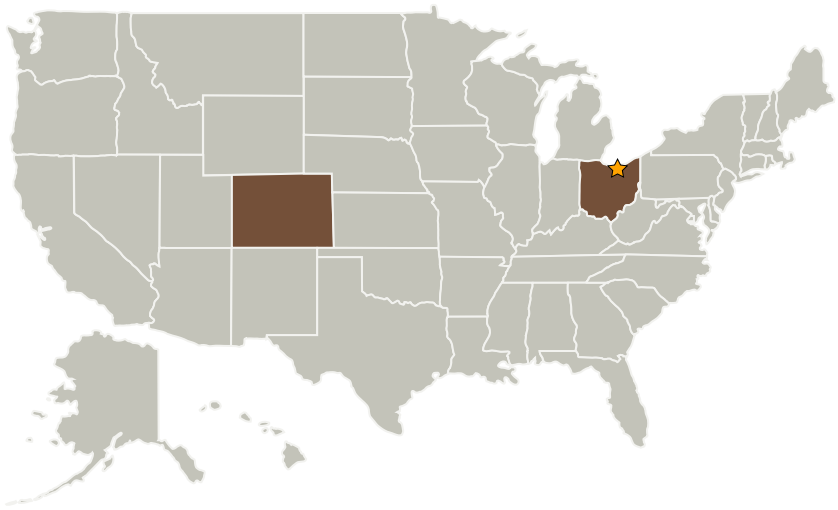
Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Composite Technology Development, Inc.	Supporting Organization	Industry	Lafayette, Colorado

Primary U.S. Work Locations	
Colorado	Ohio

Project Transitions

March 2009: Project Start

April 2012: Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
  - TX05.2 Radio Frequency
    - TX05.2.6 Innovative Antennas